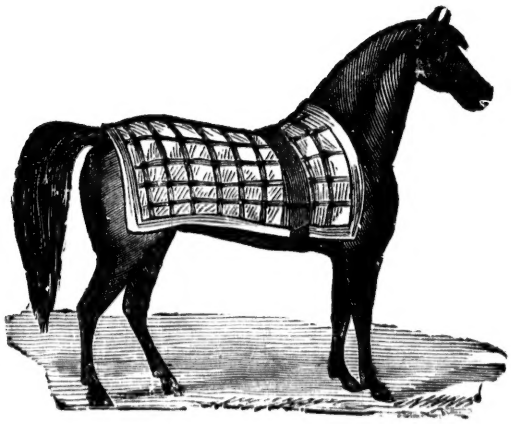
EQUINE MYOLOGY.

BY

A. H. KING, V.S.



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PREFACE

SEVERAL years' experience as a teacher of equine myology has convinced us that the great difficulty that students experience in acquiring a good knowledge of the subject arises from the fact that beginners almost invariably attempt to master too many details. We are satisfied that if the principal origin and insertion, together with the action, were first fixed on the mind, and the less important ones left to be gradually acquired in the dissecting room by practical work, the result would be more satisfactory.

Most of the facts recounted in this little hand-book, though by no means original, have been verified by the author, and arranged in such a way as to enable students to grasp at once the most important points.

My best thanks are due Mr. E. B. Holmes for his assistance in correcting the proofs.

A. H. K.

EQUINE MYOLOGY.

Myology is that branch of descriptive anatomy which treats of the muscles.

A Muscle is an organ capable of contracting when irritated chemically or by nerve stimulus.

There are two varieties of muscular tissue, striated and non-striated.

Striated Muscles are under the control of the will, with one exception, and are connected with bones, cartilage, ligaments, or skin.

Non-Striated Muscles are not under the control of the will; this kind of muscle is found forming the contractile coats of the stomach, bladder, etc.

Striated muscles are attached to other structures either directly or by means of tendons, aponeuroses or fasciæ.

Tendons are white cords or bands, formed almost exclusively of white fibrous tissue. They are inelastic and connect the muscular tissue with the parts on which they act.

Aponeuroses are membranous expansions of white fibrous tissue serving similar purposes to a tendon.

Fasciæ.—They are laminæ of fibrous or fibro-areolar tissue insheathing or serving to divide and attach muscles.

Muscles are divided according to their absolute form into long, wide and short.

Long Muscles are found principally in the limbs.

Wide Muscles are found immediately beneath the skin or around the great cavities.

Short Muscles.—These are found particularly around short bones.

Muscles are sometimes named according to the arrangement of their fibres. In some they run longitudinally with a tendon at either end.

A Penniform Muscle is one in which the fibres converge, like the plumes of a feather, to one side of a tendon which runs the entire length.

A Bi-Penniform is one in which the fibres converge from both sides of a tendon.

Radiating Muscles where the fibres converge from a broad surface to a tendinous point.

Digastric Muscle is one with the tendon in the centre.

The origin of a muscle is the most fixed and central point from which the muscle acts.

The insertion is the movable point to which the muscular force is directed; but in many muscular acts the part usually described as the insertion becomes the fixed point, and the origin the movable one.

PANNICULUS CARNOSUS.

This muscle is thin and sub-cutaneous, and covers the greater part of the body. It is divided into four portions, viz:—Facial, Cervical, Thoracic, and Abdominal.

The Facial

is thin and passes from the angle of the mouth over the masseter muscle to the zygoma.

The Cervical

is attached posteriorly to the cariniform cartilage and is fleshy; anteriorly it extends into the intermaxillary space. Laterally, above the levator humeri it is aponeurotic and blends with the funicular portion of the ligamentum nuchae.

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The Thoracic

portion is attached superiorly to the highest point of the withers; inferiorly to the point of the elbow.

The Abdominal

portion, like the cervical, is well developed; it is attached anteriorly to the internal trochanter of the humerus; posteriorly to the stifle and fascia of the thigh.

Action It corrugates the skin.

THE ABDOMINAL REGION.

This region consists of a single group of four muscles, which are in pairs:

External Oblique.	Rectus Abdominis.
Internal Oblique.	Transversalis Abdominis.

The Abdominal Tunic.

A broad sheet of yellow elastic tissue is found covering this group of muscles. It is thickest in the centre and posteriorly becoming thinner as it proceeds outwards over the External Oblique. Posteriorly it furnishes the suspensory ligaments of the sheath in the male, and slips to mammary gland in the female. It is exceedingly well developed in the ox. It serves to support the abdominal viscera and take the strain off of the abdominal muscles.

The Linea Alba,

Or white line, is a fibrous cord extending from the Ensiform Cartilage to the Pubes. It is formed by the intersection of the aponeurosis of abdominal muscles, and passes over the centre of the abdominal cavity. The name common or prepubian tendon is sometimes given to the insertion of the Linea Alba.

External Oblique.

(Obliquus Externus Abdominis.)

Origin It is attached to the outer surface of the 14 last ribs from their centres to their cartilages, the anterior slips interdigitating with serratus magnus.

Insertion To Linea Alba, Common Tendon, and external angle of the Ilium.

NOTE.—Posteriorly the aponeurosis of the external oblique appears to divide into two parts, one descending on the internal muscles of the thigh to constitute the crural aponeurosis; the other reflected upwards forming Poupart's ligament or crural arch, which is attached by its extremities from the symphysis pubes to the external angle of ilium; the upper edge is lost on the sublumbar muscles. The external inguinal ring lies in the angle formed by Poupart's ligament and the common tendon and is simply an opening through the external oblique. The crural ring is a triangular orifice behind Poupart's ligament.

Internal Oblique.

Origin From the external angle of the ilium.
Insertion To the linea alba, last rib, and its fellow of the opposite side.

Rectus Abdominis.

Origin From the ensiform cartilage of the sternum.
Insertion To the symphysis pubis, also to the linea alba throughout its whole extent.

Transversalis Abdominis.

Attachments Superiorly to the transverse processes of the lumbar vertebræ and the inner surface of the cartilages of the false ribs; inferiorly to the linea alba, and by the common tendon to the symphysis pubis.

Action Of the abdominal muscles. They assist in the passage of urine, fæces, and in parturition and difficult breathing. The rectus flexes the spine.

With this group we may rightly include another small muscle.

The Retractor of the Last Rib.

(Unimportant.)

Origin From the transverse processes of the first four lumbar vertebræ.

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Insertion To the posterior border of the last rib.
Action To assist in expiration by drawing back and fixing the last rib.

CERVICAL REGION.

This region comprises all the muscles grouped around the cervical vertebræ. They are divided into two groups, *Superior* and *Inferior Cervical.*

Superior Cervical.

Trapezius cervicalis
Rhomboideus longus
Splenius
Trachelo mastoideus
Complexus major
Rectus capitus posticus major
Rectus capitas posticus minor
Obliquis capitis posticus
Obliquis capitis anticus
Spinalis colli
Intertransversalis colli

Trapezius Cervicalis.

Origin From funicular portion of ligamentum nuchæ as high as the third cervical vertebra.
Insertion To tubercle on spine of the scapula.
Action To elevate and draw the shoulder forward.

Rhomboideus Longus.

Origin From funicular portion of ligamentum nuchæ as high as the 2nd cervical.
Insertion To inner surface of anterior angle of the scapula and cartilage of prolongation.
Action To elevate and draw the scapula forward.

Splenius.

Origin Superiorly it is attached to the ligamentum nuchæ as far forward as the crest of the occipital, and back as far as the fifth dorsal spine.
Insertion Inferiorly it digitates and is inserted to mastoid crest, wing of the atlas, transverse processes of the second, third, and fourth cervical vertebræ.

Action With its fellow, it elevates the head; alone, it draws it to one side.

Trachelo Mastoideus.

Origin From the transverse processes of the first two dorsal and oblique processes of the last five cervical.

Insertion By two tendons, one to the wing of the atlas, the other to the mastoid crest.

Action With its fellow, to elevate the head; alone, to draw it to one side.

Complexus Major.

Origin From the transverse and spinous processes of the first five dorsal and the oblique processes of all the cervical.

Insertion To the occipital tuberosity.

Action To extend the head.

Rectus Capitis Posticus Major.

Origin Spine of dentata.

Insertion To the occipital.

Action Extends the head.

Rectus Capitis Posticus Minor.

Origin From supero-anterior part of atlas.

Insertion To the occipital tuberosity.

Action To assist the major.

Obliquis Capitis Posticus.

Origin From the side of the superior spine of the axis.

Insertion To wing and body of the atlas.

Action Rotates the head.

Obliquis Capitis Anticus.

Origin From wing of atlas.

Insertion To the occipital.

Action It inclines the head on the atlas, and slightly extends it.

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Spinalis Colli.

(Semispinalis Colli).

This muscle consists of five bundles.

Origin From the oblique processes of the last five cervical vertebræ.

Insertion To the superior spines of all the cervical vertebræ, except the first and seventh.

Action Acting together, the right and left muscles will extend the cervical portion of the spinal column; singly they rotate and incline it to one side.

Intertransversalis Colli.

Consists of five bundles.

Origin From the oblique process of one cervical vertebræ.

Insertion To the transverse process of the vertebræ in front.

Action To bend the neck to one side.

Inferior Cervical Group.

Levator humeri.	Rectus capitus anticus major.
Sterno maxillaris.	Rectus capitus anticus minor.
Sterno-thyro-hyoideus.	Rectus capitus lateralis.
Subscapulo-hyoideus.	Scalenus.
	Longus Colli.

Levator Humeri (2).

(Mastoido Humeralis).

Origin From the crest of the occipital, mastoid process and crest of the temporal, attached to the wing of the atlas, transverse processes of the second, third and fourth cervical vertebræ.

Insertion To the deltoid ridge of the humerus.

Action It extends and rotates the shoulder joint. When the limb is fixed it draws the head to one side.

Sterno Maxillaris (2)

Origin From the cariniform cartilage of the sternum.
Insertion To the angle of the inferior maxillary bone.
Action To flex the head when acting with its fellow; singly to incline it to one side

NOTE.—These muscles are in contact in the lower half of the neck.

Sterno-Thyro-Hyoideus (2).

Origin From the cariniform cartilage of the sternum.
Insertion To the thyroid cartilage and body of the hyoid bone.
Action It draws down the base of the tongue and larynx.

NOTE.—This is a digastric muscle; below the central tendon the two muscles are in intimate relation; above they separate, forming a sling for the trachea.

Subscapulo-Hyoideus.

Origin From the fascia covering the subscapularis muscle.
Insertion To the hyoid bone.
Action It depresses the hyoid apparatus.

Rectus Capitus Anticus Major.

Origin From the transverse processes of the third, fourth and fifth cervical vertebræ.
Insertion To the basilar process of the occiput.
Action With its fellow, it flexes the head downwards; when acting alone, it draws it to one side.

Rectus Capitus Anticus Minor.

Origin From the lower part of the ring of the atlas.
Insertion To the basilar process of the occiput.
Action It assists in flexing the head.

Rectus Capitus Lateralis.

Origin From the inferior part of the atlas.
Insertion To the styloid process of the occiput.
Action To assist the preceding muscles.

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Scalenus.

Origin From the transverse processes of the four last cervical vertebræ.
Insertion To the upper third of the first rib.
Action When the first rib is fixed together these muscles extend the neck; acting singly, each turns it to one side. When the neck is fixed, by drawing the rib forward it assists in inspiration.

Longus Colli.

Origin From the inferior surface of the bodies of the first six dorsal and last six cervical.
Insertion To the tubercle of the atlas.
Action It flexes the neck downwards.

PECTORAL REGION.

In this region there are two groups, the pectoral and the sternal.

Pectoral Group.

Anterior superficial pectoral
Posterior superficial pectoral.
Anterior deep pectoral.
Posterior deep pectoral.

Anterior Superficial Pectoral.

(Pectoralis Anticus.)

Origin From the cariniform cartilage and first bone of the sternum.
Insertion To the deltoid ridge of the humerus.
Action To adduct the arm.

Posterior Superficial Pectoral.

(*Pectoralis Transversalis.*)

Origin From the greater part of inferior border of the sternum.
Insertion To the deltoid ridge of the humerus and the fascia on the inner surface of the fore-arm.
Action To adduct the arm.

Anterior Deep Pectoral.

(*Pectoralis Parvus.*)

Origin From the side of the anterior half of the sternum; cariniform cartilage, and cartilages of the first four ribs.

Insertion To the fascia of the antea spinatus.

Action It draws the shoulder backwards and downwards.

Posterior Deep Pectoral.

(*Pectoralis Magnus.*)

Origin From the posterior half of the sternum, abdominal tunic, ensiform cartilage and cartilages of the four last true ribs.

Insertion To the inferior prominence of the internal trochanter of the humerus.

Action To pull the shoulder joint, and thus draw the whole limb backwards.

Sternal Group.

Consists of two muscles:

Lateralis sterni. Triangularis sterni.

Lateralis Sterni.

Origin From the outer surface of the first rib.

Insertion To the fourth segment of the sternum.

Action It assists in expiration.

Triangularis Sterni.

Origin From the superior sternal ligament and segments.

Insertion To the cartilages, and inner surfaces of the distal ends of the true ribs, except the first.

Action To assist in expiration.

SUBLUMBAR REGION.

Consists of a single group.

Psoas magnus. Iliacus.
Psoas parvus. Quadratus lumborum.

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Psoas Magnus.

Origin From the under surface of the last two ribs, the bodies of last two dorsal, and the transverse processes of all the lumbar vertebræ, except the last.

Insertion To the small internal trochanter of the femur.

Action When the spine is fixed to flex and rotate the femur outwards; when the femur is fixed to flex the spine.

Psoas Parvus.

Origin From the bodies of last four dorsal, and all the lumbar vertebræ.

Insertion To the ilio-pectineal eminence.

Action To flex the pelvis on the spine, when both muscles act; if the pelvis is fixed to arch the back.

Iliacus.

Origin From the venter surface of the ilium outside its union with the sacrum.

Insertion To the internal trochanter of the femur, with psoas magnus.

Action To flex the femur.

NOTE.—Posteriorly this muscle is grooved for the passage of the tendon of the psoas magnus.

Quadratus Lumborum.

Origin From the inferior sacro-iliac ligament.

Insertion To the tips of the lumbar transverse processes, and to the last rib.

Action To assist in respiration and lateral flexion of the lumbar vertebræ.

DIAPHRAGM.

This is a very important muscle, separating the thoracic from the abdominal cavity. It is divided into two portions, a flat and fleshy:

Attachments The flat, or main, portion is attached to the ensiform cartilage of the sternum, and the cartilages of the twelve last ribs. It is composed of muscular tissue on the outside and is tendinous in the centre.

The fleshy portion, or pillars, the left of which is the smaller, run back along the bodies of the lumbar vertebræ, to which they are attached.

Action It is the great muscle of inspiration.

Foramina *Foramen dextrum*, below and to the right, for the passage of the posterior vena cava.

Foramen sinistrum, is to the left, for the passage of the œsophagus and pneumogastric nerve.

Hiatus Aorticus, between the piliars—for the passage of the posterior aorta, vena azygos and thoracic duct.

MUSCLES OF THE FORE LIMB.

These are divided into four principal regions :—

Shoulder or Scapular.
Arm or Brachial.
Fore-arm or Antibrachial.
Foot or Metacarpal.

The shoulder or scapular comprises two groups, an external and an internal.

External Scapular Group.

Antea-spinatus Deltoid.
Postea-spinatus, Teres Minor.

Antea Spinatus

Origin Antea-spinatus, fossa as high as the cartilage of prolongation.

Insertion By two tendons, one to the summit of the external trochanter, and one to the summit of the internal trochanter of the humerus.

Action To extend the humerus on the scapula.

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Postea-spinatus.

Origin Postea-spinatus, fossa as high as the cartilage of prolongation.

Insertion By two tendons, one to the convexity of the external trochanter of the humerus, the other passes over the convexity and is inserted to the deltoid ridge.

Action To abduct the humerus.

Deltoid

(Teres Externus.)

Origin It is in two portions, one originates from the tubercle on the spine of the scapula, and the other from the posterior angle.

Insertion To the deltoid ridge of the humerus.

Action To abduct and rotate the humerus outwards, and flex the shoulder joint.

Teres Minor.

(Postea Spinatus Minor.)

Origin From the posterior border of the scapula and the ridges in the lower part of the postea spinatus fossa.

Insertion To the deltoid ridge above its tubercle.

Action Same as the deltoid.

INTERNAL SCAPULAR GROUP.

Subscapularis.

Origin Subscapularis fossa.

Insertion To the posterior prominence of the internal trochanter of the humerus.

Action To adduct the arm.

Teres Internus.

(Teres Major.)

Origin From the posterior angle and border of the scapula.

Insertion The internal tuberosity of the humerus.

Action To adduct and rotate the humerus inwards, and flex the shoulder joint.

Scapula Humeralis Posticus.

Origin From the posterior part of the scapula, just above the glenoid cavity.

Insertion To the posterior part of the humerus immediately below the head.

Action To render tense the capsular ligament of the joint.

THE BRACHIAL REGION

Comprises two groups, anterior and posterior.

Anterior Brachial Group.

Flexor-brachii.
Coraco-humeralis.
Humeralis-obliquus.

Flexor Brachii.

(*Biceps, long Flexor of Fore-arm.*)

Origin Coracoid process of the scapula.

Insertion To the bicipital tuberosity of the radius.

Action To flex the fore-arm on the arm. It also has a slight extension action on the shoulder joint.

NOTE.—This muscle is very important; after leaving the coracoid process of the scapula, it passes through the bicipital groove of the humerus. It is tendinous here, and has a large synovial bursa interposed; below this it has a large fleshy belly, which passes over the anterior surface of the humerus.

Coraco Humeralis.

Origin From the coracoid process of the scapula.

Insertion By two tendons, one to the internal, and the other to the anterior surface, of the humerus.

Action To adduct and flex the shoulder joint.

Humeralis Obliquus.

(*Brachialis Anticus*).

Origin From the posterior surface of the humerus just below the head; passes down the musculo-spiral groove.

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Insertion It is inserted to the radius immediately below the bicipital tuberosity; also to the ulna.

Action To flex the elbow joint.

POSTERIOR BRACHIAL GROUP.

Triceps extensor brachii.
Scapulo-ulnaris.
Anconeus.

Triceps Extensor Brachii.

Comprises: Caput magnum,
Caput medium,
Caput parvum.

Caput Magnum.

Origin From the posterior border of the scapula.
Insertion To the upper part of the olecranon.

Caput Medium.

Origin From the supero-external part of the humerus.
Insertion To the superior part of the olecranon.

Caput Parvum.

Origin From the internal surface of the humerus, below the internal tubercle.
Insertion To the olecranon.
Action They all extend the fore-arm upon the arm, and the magnum has a flexion action on the shoulder joint.

Scapulo Ulnaris.

Origin From the posterior angle of the scapula.
Insertion To the olecranon.
Action To assist the caput magnum.

Anconeus.

Origin From the borders of the olecranon fossa.
Insertion To the anterior and external part of the olecranon.
Action To tense the capsular ligament of the elbow joint.

ANTIBRACHIAL REGION, OR FORE-ARM.

Comprises { **Anterior Antibrachial Group.**
Posterior " "

Anterior Antibrachial Group.

Extensor metacarpi magnus.
Extensor metacarpi obliquus.
Extensor Pedis.
Extensor suffraginis.

Extensor Metacarpi Magnus.

(*Anterior extensor of the Metacarpus.*)

Origin From the external condyle of the humeru and capsular ligament of the elbow joint.
Insertion To the supero-anterior part of the larg metacarpal.
Action To extend the metacarpal bones.

Extensor Metacarpi Obliquus.

(*Oblique extensor of the metacarpus.*)

Origin From the lower third of the external borde of the radius.
Insertion To the head of the internal small metacarpa
Action To aid the large extensor.

NOTE.—It passes over the tendon of the magnus a has a bursa interposed.

Extensor Pedis.

(*Anterior extensor of the phalanges.*)

Origin It originates from the external condyle of th humerus, also attached to the extern tuberosity and outer border of the radiu
Insertion To the pyramidal process of the os pedis. is also attached to the capsular ligament the fetlock joint, os suffraginis and corona
Action To extend the interphalangeal joints, the fe lock and the carpus.

NOTE.—Like the extensor metacarpi magnus, it h a large fleshy belly at its upper part. It becomes te dinous about two-thirds of the way down the radiu

RE-ARM.

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The tendon is double, and passes through a groove on the antero-inferior part of the distal end of the radius, where it is bound down by the anterior annular ligament. After emerging at the lower part of the ligament the two tendons separate, one going to join the extensor suffraginis, the main one passing down to the pyramidal process of the os pedis. In its course over the os suffraginis it is joined by the bifurcations of the suspensory ligaments.

Extensor Suffraginis.

(*Lateral Extensor of the Phalanges.*)

Origin From two points; one from the external tuberosity at the proximal extremity of the radius, and one from the ulna.

Insertion To the supero-anterior part of the os suffraginis.

Action It extends the digit.

NOTE.—This muscle is small, and passes down the outer side of the radius through a groove in the external tuberosity at the distal extremity, and under the annular ligament; upon emerging it is supported by a slip from the tendon of the extensor pedis, and one from the annular ligament. It then passes to the os suffraginis.

POSTERIOR ANTEABRACHIAL GROUP.

Flexor metacarpi externus.
Flexor metacarpi medius.
Flexor metacarpi internus.
Flexor pedis perforatus.
Flexor pedis perforans.
Ulnaris accessorius.
Radialis accessorius.

Flexor Pedis Perforatus.

(*Superficial Flexor.*)

Origin From the internal condyle of the humerus.

Insertion To the lateral sides of the os coronæ.

Action To flex the pastern and fetlock joints, and assist in flexing the carpus.

NOTE.—The perforatus is more superficial than the

perforans. It becomes tendinous as it approaches the knee, and receives a fibrous stay from the posterior surface of the radius, which holds it in its place. The tendons of both muscles pass through the carpal arch; as they descend the perforatus receives a slip on each side from the metacarpal, or check, ligament. It helps to form an arch at the fetlock through which the perforans passes. Below the fetlock it becomes still wider, and at about the middle of the phalangeal region it divides before becoming inserted to the sides of the os coronæ.

Flexor Pedis Perforans.

(Deep Flexor of the Phalanges.)

Origin At the internal condyle of the humerus.
Insertion To the tendinous surface of the os pedis.
Action It flexes the joints below the carpus and assists in flexing the latter.

NOTE.—This muscle is larger than the perforatus, and becomes tendinous just above the carpus. This tendon passes through the posterior carpal sheath. About one-half way down the metacarpal it receives the metacarpal, or check ligament, which holds it in position. At the fetlock it passes through the incomplete arch formed by the perforatus, and widens out before becoming inserted. The synovial membranes are one at the knee, common to both tendons; one at the fetlock, also common to both tendons. At the navicular bone there is a special one for the perforans.

Ulnaris Accessorius.

(Unimportant.)

Origin From the posterior border and summit of the olecranon.
Insertion It blends with the tendons of the perforans near the carpus.
Action It assists the flexor perforans.

Flexor Metacarpi Externus.

(External flexor of the metacarpus).

Origin From the external condyle of the humerus and capsular ligament of the elbow joint.

Insertion By two tendons, one to the superior border of the trapezium, and one to the external small metacarpal.

Flexor Metacarpi Medius.

(Oblique flexor of the metacarpus).

Origin From the internal condyle of the humerus and the olecranon.
Insertion To the trapezium.

Flexor Metacarpi Internus.

Origin From the interal condyle of the humerus.
Insertion To the head of the internal small metacarpal bone.
Action The action of the last three muscles is to flex the metacarpus on the radius.

Radialis Accessorius.

(Unimportant).

Origin From the posterior part of the shaft of the radius.
Insertion It joins the tendon of the perforans.
Action To assist the flexor perforans.

METACARPAL REGION.

This region consists of two pairs of exceedingly small muscles.

Interossei Metacarpi.
Lumbricales. } *(Unimportant).*

Interossei Muscles (2).

These muscles are very slender, and are situated on the inner side of the small metacarpal bones.

Origin From near the head of the small metacarpal.
Insertion To the bifurcations of the suspensory ligament.

Lumbricales (2).

These muscles originate on either side of the perforans, just above the fetlock, and are lost in the coverings of the fetlock joint.

COSTAL REGION.

Consists of a single group.

Trapezius dorsalis.	Serratus anticus.
Rhomboideus brevis.	Serratus posticus.
Latissimus dorsi.	External intercostal.
Serratus magnus.	Internal intercostal.
Transversalis costarum.	Levatores costarum.

Trapezius Dorsalis.

Origin From the supraspinous ligament, extending from the highest point of the withers to the 12th dorsal vertebra.
Insertion To the tubercle on the spine of the scapula.
Action To draw the scapula upwards and backwards.

Serratus Anticus.

(*Part of superficialis costarum.*)

Origin From the summits of the dorsal spines, from the 1st to the 13th inclusive.
Insertion It digitates inferiorly and is attached to the anterior border of the nine ribs succeeding the fourth.
Action To assist in inspiration.

Serratus Posticus.

(*Part of superficialis costarum.*)

Origin From the spinous processes of the dorsal vertebræ after the fourth, and to some lumbar vertebræ.
Insertion To the posterior border of the nine last ribs.
Action To assist in expiration.

External Intercostals.

(17 *pairs.*)

Origin From the posterior border of each rib.
Insertion To the anterior border of each succeeding rib.
Action They are inspiratory muscles.

Internal Intercostals.

(17 *pairs.*)

Origin and Insertion The same as the externals, but the fibres run downwards and forwards.

Action They are expiratory muscles.

Rhomboideus Brevis.

Origin From the spines of the first five dorsal vertebræ.

Insertion To superior part of the inner surface of the scapula and cartilage of prolongation.

Action To draw the scapula upwards.

Latissimus Dorsi.

Origin It is attached superiorly to the supraspinous ligament from the highest point of the withers to the last lumbar vertebræ.

Insertion To the internal tuberosity of the humerus.

Action To flex the shoulder joint.

NOTE.—This muscle is continuous posteriorly with the gluteal fascia.

Serratus Magnus.

Origin From the transverse processes of the five posterior cervical vertebræ and the external surface of the eight true ribs from their middles to their cartilages.

Insertion To the venter surface of the scapula between the origin of the subscapularis and the insertion of the rhomboideus brevis.

Action To draw the scapula close to the body, and when the limbs are fixed it elevates the neck.

Transversalis Costarum.

Origin From the transverse processes of the first lumbar vertebræ, and the ribs near their angles.

Insertion To the external surface of all the ribs below the inferior border of longissimus dorsi, a tendon to each, and one to the last cervical vertebræ.

Action It assists in expiration.

Levatores Costarum,

(17 *pairs.*)

Origin From the transverse processes of the dorsal vertebræ.

Insertion To the external faces of the ribs, just above their angles.

Action It assists in inspiration.

DORSO LUMBAR REGION.

Consists of a single group.

Longissimus dorsi.
Semispinalis dorsi.

Longissimus Dorsi.

Origin From the crest and venter surface of the ilium; the spinous and transverse processes of the first two bones of the sacrum: the spinous transverse and oblique processes of all the lumbar vertebræ; the spinous and transverse processes of all the dorsal vertebræ; the supraspinous ligament of the dorsal and lumbar regions, and the ribs as far outwards as their angles.

Insertion To the transverse and spinous processes of the four last cervical vertebræ.

Action It extends the spine and elevates the neck.

NOTE.—Anteriorly the muscle divides into an inner and outer part, and between the two divisions, which are difficult to separate, the complexus major and trachelo-mastoideus originate. The inner portion, the spinalis dorsi of some writers, is attached to the supraspinous ligament as far back as the twelfth dorsal

vertebræ, and to the first six dorsal spines, and is inserted into the spinous processes of the four last cervical.

Semispinalis of the Back and Loins.

(Semispinalis dorsi et lumborum).

Origin From the sacrum, the oblique processes of all the lumbar, and the transverse processes of all the dorsal.

Insertion To the spinous process of the third or fourth anterior vertebræ.

Action The right and left muscles, acting together, extend the spine; singly, they are lateral flexors.

COCCYGEAL REGION.

This group contains four pairs of muscles :—

Erector coccygis (2).
Depressor coccygis (2).
Curvator coccygis (2).
Compressor coccygis (2).

Erector Coccygis.

Attached To the upper part of the sacrum and coccygeal bones.

Action When acting together, to elevate the tail; singly, to draw it upwards and outwards.

Depressor Coccygis.

Attached To the under surface of the sacrum and coccygeal bones.

Action To bend the tail downwards; singly, to draw it to one side.

Curvator Coccygis.

Attached To the lateral side of the sacrum and coccygeal bones.

Action To curve the tail sideways.

Compressor Coccygis.

Origin From the inner surface of the sacro-sciatic ligament.

Insertion To the last two sacral and first two coccygeal vertebræ.

Action With its fellow, it forcibly depresses the tail; singly, it draws it to one side.

Muscles of the Posterior Limb.

These form four principal regions:

Gluteal.	Tibial.
Femoral.	Metatarsal.

GLUTEAL REGION.

This region comprises several muscles, viz:

Gluteus externus.	Obturator internus.
Gluteus maximus.	Obturator externus.
Gluteus internus.	Pyriformis.
Rectus parvus.	Gemellus anticus.
Gemellus posticus.	

Gluteus Externus.

(Superficial Gluteus.)

Origin This muscle has two origins, one from the spines of the sacrum, and one from the external angle of the ilium.

Insertion To the trochanter minor externus of the femur.

Action To flex and abduct the femur.

Gluteus Maximus.

(Middle Gluteus.)

Origin From the tendinous envelope of the longissimus dorsi, upper surface of the ilium and sacro-sciatic ligament.

Insertion By two tendons, one to the summit of the

trochanter major, and the other passes over the convexity and is inserted to a roughened ridge below.

Action To extend the femur on the pelvis, and when the posterior limbs are fixed to assist in rearing.

Gluteus Internus.

(Deep Gluteus.)

Origin From the shaft of the ilium.
Insertion To the hollow inside of the trochanter major of the femur.
Action Abducts and rotates inwards the hip-joint.

Rectus Parvus.

Origin From the rim of the acetablum.
Insertion To the supero-anterior part of the femur.

Obturator Externus.

Origin From the outside of the obturator foramen.
Insertion In the trochanteric fossa.

Obturator Internus.

Origin From the inside of the obturator foramen.
Insertion In the trochanteric fossa.

Pyriformis.

Origin From two points, one from the transverse processes of the sacrum, and one from the inner surface of the shaft of the ilium.
Insertion In the trochanteric fossa.

Gemellus, { Anticus, Posticus.

Origin From the shaft of the ischium, one in front and one behind the conjoined tendon of the obturator internus and pyriformis.

Insertion Trochanteric fossa.
Action The last six muscles rotate the limb outwards and help to abduct it.

FEMORAL REGION.

Divided into four groups :—

Internal,	Anterior,
External,	Posterior.

Internal Femoral Group.

Sartorius,	Adductor brevis,	Triceps adductor femoris.
Gracilis,	Adductor longus,	
Pectineus.	Adductor magnus.	

Sartorius.

(*Long adductor of the leg.*)

Origin From the iliac fascia near the tendon of the psoas parvus.
Insertion To the internal straight ligament of the patella and supero-internal part of the libia.
Action To adduct and flex the femur.

Gracillis.

(*Short adductor of the leg.*)

Origin From the inferior surface of the ischo-pubio symphysis.
Insertion To the internal straight ligament of the patella and supero-internal part of the libia.
Action To adduct the limb.

Pectineus.

Origin From the inferior surface of the pubis by two tendons—one each side of the pubio-femoral ligament.
Insertion To the internal border of the femur, near the nutrient foramen.
Action To adduct and flex the femur.

Adductor Brevis.

(*Small adductor of the thigh.*)

Origin Superiorly from the inferior surface of the pubis.
Insertion To the posterior surface of the femur—about the middle.
Action To adduct and rotate the femur outwards.

Adductor Longus.

(*Great adductor of the thigh.*)

Origin From the inferior surface of the ischium.
Insertion By two tendons, one to the middle of the femur with the brevis, and one to the internal condyle.
Action To adduct and rotate the femur outwards.

Adductor Magnus.

(*Semi-membranosus.*)

Origin From the coccygeal fascia and tuberosity of the ischium.
Insertion To the internal condyle of the femur.
Action To adduct the limb and extend the thigh.

EXTERNAL FEMORAL GROUP.

One muscle.

Triceps Abductor Femoris.

Origin From the spines of the sacrum, sacro-sciatic ligament and ischial tuberosity.
Insertion By three divisions, one to between the two small trochanters of the femur, one to the patella, and one to the thigh by fascia.
Action It abducts the entire limb; the anterior half of the muscle extends the stifle and the posterior half flexes it.

ANTERIOR FEMORAL GROUP.

Tensor vaginæ femoris. Rectus femoris.
Vastus externus. Vastus internus.
Crureus.

Tensor Vaginæ Femoris.

Origin From the external angle of the ilium.
Insertion Into the fascia lata.
Action It flexes the hip joint, and renders tense the fascia lata.

Rectus Femoris.

Origin From two depressions in front of the acetabulum.
Insertion To the superior surface of the patella.
Action To flex the hip joint and extend the stifle.

Vastus Internus.

Origin From the internal border and inner half of the anterior surface of the femur.
Insertion To the patella and is continuous with the internal straight ligament of the same.
Action To extend the stifle.

Vastus Externus.

Origin From the external border and outer half of anterior surface of the femur.
Insertion To the patella, and is continuous with the external straight ligament.
Action To extend the stifle.

Rectus Parvus.

Origin From brim of the acetabulum.
Insertion To the anterior and upper part of the femur.
Action Tenses the capsular ligament of the hip-joint.

POSTERIOR FEMORAL GROUP.

Biceps rotator tibialis.
Ischio femoralis.

Biceps Rotator Tibialis.

(Semitendinosus).

Origin From the spines of the sacrum, sacro-sciatic ligament, and ischial tuberosity.
Insertion To the crest of the tibia.
Action To flex the stifle and rotate the leg inwards.

Ischio Femoralis.

(Unimportant).

Origin From the inferior surface of the ischium.
Insertion To the upper third of the posterior surface of the femur.
Action To extend and adduct the femur.

TIBIAL REGION.

Divided into anterior and posterior groups.

Anterior. { Flexor metatarsi. Extensor pedis. } Flexors. / Extensor. Peroneus.

Flexor Metatarsi.

Origin From a pit between the external condyle and trochlea of the femur.
Insertion To the supero-anterior part of the large metatarsal, the cuboid and small cuneiform.
Action It flexes the tarsal joint.

NOTE.—This is one of the most important muscles in the body, and is made up of a tendinous and a fleshy portion. The tendinous portion arises as indicated above from the femur. The fleshy portion, arises from the groove on the outer surface of the tibia.

Extensor Pedis.

Origin From the pit between the external condyle and trochlea of the femur.
Insertion To the pyramidal process of the os pedis.
Action To extend the entire digit and flex the tarsal joint.

NOTE.—It is bound down by the anterior annular ligament. About one-half way between the hock and fetlock it is joined by the tendon of the peroneus.

Peroneus.

Origin From the head and body of the fibula.
Insertion It joins the tendon of the extensor pedis.
Action It assists the extensor pedis.

POSTERIOR TIBIAL REGION.

Extensors. { Gastrocnemius externus. / Plantaris.

Flexors. { Gastrocnemius internus. / Flexor pedis perforans. / Flexor pedis accessorius. / Popliteus.

Gastrocnemius Externus.

Origin From each side of the supracondyloid fossa.
Insertion To the summit of the os calcis.
Action To flex the stifle joint and extend the hock.

Soleus, or Plantaris.

Origin From the head of the fibula.
Insertion It joins the tendon of the gastrocnemius externus.
Action It assists very slightly the gastrocnemius externus.

Gastrocnemius Internus.

Origin In the supracondyloid fossa. It becomes tendinous and winds from within outwards

until it becomes external and forms a cap for the os calcis. Below this it is known as the perforatus, which is inserted the same as in the fore limb.

Action To flex the fetlock, pastern, and stifle joints, and extend the hock.

Flexor Pedis Perforans.

Origin From the posterior surface of the tibia below the oblique line.

Insertion To the tendinous surface of the os pedis.

Action To flex the phalanges and assist in extending the tarsal joint.

NOTE.—It has a fleshy belly, but forms a tendon before reaching the tarsal arch, through which it passes. Where it passes through the arch there is a very large synovial sac, which extends below the hock. About one-third of the way down the large metatarsal it is joined by the check ligament and the tendon of the flexor pedis accessorius. Below this it has the same arrangement as in the fore limb.

Flexor Pedis Accessorius.

Origin From the external tuberosity of the tibia. It passes through a groove on its inner aspect.

Insertion It joins the tendons of the flexor perforans.

Action To assist the flexor pedis perforans.

Popliteus.

Origin From the external condyle of femur.

Insertion To the posterior surface of the tibia above the oblique line.

Action It flexes the stifle joint.

REGION OF THE HEAD.

Anterior Maxillary Group.

Orbicularis oris.	Dilator naris transversalis.
Zygomaticus.	Dilator naris inferioris.
Buccinator.	Dilator naris superioris.
Supernaso-labialis.	Depressor labii superioris.
Supermaxillo-labialis.	Depressor labii inferioris.
Dilator naris lateralis.	Levator labii inferioris.

Orbicularis Oris.

This is a layer of muscular fibres, forming a sphincter around the anterior opening of the mouth.

Zygomaticus.

Origin	From the fascia of the masseter, near the anterior extremity of the maxillary spine.
Insertion	To the orbicularis oris.
Action	It retracts the angle of the mouth.

Buccinator.

Origin	From the alveoli of the molar teeth of the superior and inferior maxillary.
Insertion	To the orbicularis oris.
Action	It presses the food between the teeth.

Levator Labii Superiori Alaequi Nasi.

(Supernaso labialis).

Origin	From the frontal and nasal bones.
Insertion	To the nostril and upper lip.
Action	It raises the upper lip and dilates the nostril.

Nasalis Longus.

(Supermaxillo Labialis, Levator Labii Superioris Proprius)

Origin	From the superior maxilla.
Insertion	With its fellow by a common tendon to the upper lip.
Action	To elevate the upper lip.

Dilator Naris Lateralis.

Origin	From the anterior extremity of the maxillary spine.
Insertion	To the side of the nostril and upper lip
Action	To dilate the nostril.

Dilator Naris Transversalis.

Origin From the nasal peak.
Insertion To the cartilage of the nostrils.
Action It dilates the nostrils.

Dilator Naris Inferioris.

Origin From the pre-maxillary.
Insertion To the nostril.
Action It dilates the nostrils.

Dilator Naris Superioris.

Origin From the free portion of the nasal bone.
Insertion To the side of the nostril.
Action It dilates the nostril.

Depressor Labii Superioris.

Origin From the premaxilla.
Insertion To the upper lip and nasal cartilage.
Action To close the upper lip and dilate the nostril.

Depressor Labii Inferioris.

Origin From the border of the inferior maxillary just behind the last molar.
Insertion To the lower lip.
Action To depress the lower lip.

Levator Labii Inferioris.

Origin From the alveoli of the inferior maxilla, between the lateral incisors and tusks.
Insertion To the under lip.
Action It elevates the lower lip.

Posterior Maxillary Group.

Masseter.	Pterygoideus externus.
Temporal.	Pterygoideus internus.
Stylor. maxillaris.	Digastricus.

Masseter.

Origin From the external surface and spine of the superior maxillary.

Insertion To the posterior part of the external surface of the inferior maxillary.
Action To close the mouth.

Temporal.

Origin Around the temporal fossa.
Insertion To the coronoid process of the inferior maxillary.
Action It elevates the lower jaw and moves it from side to side.

Stylo-Maxillaris.

Origin From the styloid process of the occipital bone.
Insertion To the posterior border of the inferior maxillary.
Action To open the mouth.

Pterygoideus Externus.

Origin From the pterygoid process and body of the sphenoid.
Insertion To the neck of the condyle of the inferior maxillary.
Action Acting with its fellow it protrudes the lower jaw; singly it produces lateral motion.

Pterygoideus Internus.

Origin From the pterygoid process and body of the sphenoid.
Insertion To the internal surface of the inferior maxillary opposite the masseter.
Action With its fellow it elevates the lower jaw, singly it moves it to one side.

Digastricus.

Origin From the styloid process of the occipital.
Insertion To the inner surface of the lower jaw near the symphysis.
Action It elevates the hyoid bone, and depresses the inferior maxillary.

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HYOIDEAN GROUP.

Mylo-hyoideus.	Genio-hyoideus.
Hyoideus Magnus.	Hyoideus Transversus.
Hyoideus Parvus.	Stylo-hyoideus.

Mylo-Hyoideus.

This muscle is attached externally to the inner surface of the rami of the inferior maxillary as far forward as the symphysis; posteriorly to the spur process and body of the hyoid bone; internally it meets its fellow of the opposite side.

Action It elevates the tongue, and forms a sling for the same.

Hyoideus Magnus.

Origin From the posterior inferior angle of the cornu of the os hyoides.

Insertion To the heel process of the os hyoides.

Action It draws the os hyoides backwards and upwards.

Hyoideus Parvus.

Origin From the inferior border of the anterior extremity of the cornu, and the posterior border of the corniculum.

Insertion To the body and heel process of the os hyoides.

Action It approximates the three bones to which it is attached.

Genio Hyoideus.

Origin From the lower jaw near the symphysis.

Insertion To the free axtremity of the spur process of the os hyoides.

Action It draws the os hyoides towards the antero-inferior part of the maxillary space.

Hyoideus Transversus.

Attachments To the two cornicula of the os hyoides.
Action To approximate the two cornicula.

Stylo Hyoideus.

Origin The anterior border of the styloid process.
Insertion The posterior part of the cornu.
Action It draws back and depresses the os hyoides.

The Palpebral and Auricular groups are unimportant.

LINGUAL MUSCLES.

The Lingual muscles are divided into extrinsic and intrinsic.

The extrinsic are as follows :—

Hyo-glossus Longus.
Genio-hyo-glossus.
Hyo-glossus brevis.
Hyo-glossus parvus.
Pharngo-glossus
Palato-glossus.
} *Unimportant.*

Hyo-Glossus Longus.

Origin From the external surface of the cornu of the os hyoides.
Insertion To the substance of the tongue.
Action With its fellow to retract the tongue; singly to draw it to one side.

Genio-hyo Glossus.

Origin From the hyoid bone.
Insertion To near the symphysis of the inferior maxilla.
Action To protrude or retract or depress the tongue.